

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: James M. Ntambi *et al.*

Date: December 15, 2010

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Examiner: Andrae M. Holt

Title: METHOD FOR INCREASING INSULIN
SENSITIVITY AND FOR TREATING
AND PREVENTING TYPE 2 DIABETES

File No.: 960296.99128

Confirmation No.: 2922

DECLARATION UNDER 37 C.F.R. § 1.132

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

I, James M. Ntambi, on oath say and declare that:

1. I am the same James M. Ntambi who is a named inventor of the above-identified patent application. I make this declaration in support of the application.

2. I am a Katherine Berns Von Donk Steenbock Professor of Biochemistry and of Nutritional Sciences at the University of Wisconsin-Madison. I obtained my PhD degree in Biochemistry and Molecular Biology in 1985 from Johns Hopkins University School of Medicine, Baltimore, Maryland. I did my postdoctoral fellowship and research associateship at Johns Hopkins University School of Medicine and in 1989 joined the faculty of the Georgetown University School of Medicine in Washington DC as assistant professor of Biochemistry and molecular biology. I joined the faculty of the University of Wisconsin-Madison in 1992. At the University of Wisconsin-Madison, my research focuses on genetic regulation of metabolism, particularly the stearoyl-CoA desaturase genes. I have published many articles on this subject and have received many honors and awards for my research accomplishments. A copy of my Curriculum Vitae is attached as Exhibit A.

3. I have reviewed the Office Action issued in this matter by the U.S. Patent and Trademark Office on June 18, 2010. I understand that Claim 7 is rejected for alleged obviousness over U.S. Patent No. 7,132,529 to Crooke *et al.*, in view of U.S. Patent Application No. 2003/0157552 to Hayden *et al.*, in further view of Ntambi, J. Lipid Res. 40:1549 (1999). This Declaration is submitted to provide evidence that the pertinent subject matter of Hayden was not disclosed by Hayden before the invention by the instant Applicants for patent.

4. At my direction and under my supervision, members of my laboratories conducted the following experiment demonstrating that SCD1 knockout mice have increased insulin sensitivity relative to mice expressing SCD1. This result is further described by paragraph [0124] of the specification.

5. In the experiment, glucose tolerance was measured in male and female mice carrying either a heterozygous (+/-) or homozygous (-/-) deletion of the gene encoding SCD1. Mice were fasted for 4 hours. Each animal then received 2g per kg body weight glucose by oral gavage. Plasma glucose was measured at 10 minute intervals for a total of 70 minutes using the glucose oxidase method. Glucose was cleared faster out of the blood circulation of the homozygous mice than in heterozygous mice. This result indicated that the homozygous (-/-) SCD1 mice have increased insulin sensitivity relative to the heterozygous (+/-) SCD1 mice.

6. I hereby declare that all statements made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true; and further, that these statements are made with knowledge that willful false statements, and the like so made, are punishable by fine or imprisonment, or both, under Section 1001, Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Dated: 12/15/2010

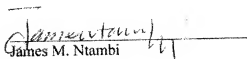

James M. Ntambi

EXHIBIT A

Curriculum Vitae

James Mukasa Ntambi, PhD

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TITLE: Steenbock Professor

EDUCATION AND DEGREES:

1972-1975 **BSc (Hons) Chemistry and Biochemistry**
Makerere University, Kampala, Uganda

1975-1978 **Msc in Microbial Biochemistry**
Makerere University, Kampala, Uganda

1980-1985 **PhD Johns Hopkins University School of Medicine, Baltimore, MD, USA**
Thesis title: "Studies on the Replication of Kinetoplast DNA in
Trypanosoma Equiperdum" Major Professor: Paul Englund

POSITIONS HELD:

1975-1978 **Research Fellow**, Federal Republic of Germany (DAAD)
Makerere University, Kampala, Uganda

1976-1980 **Resident Tutor/Warden**, Makerere University, Kampala, Uganda

1978-1980 **University Lecturer** in Biochemistry, Makerere University,
Kampala, Uganda

1980-1985 **Fulbright Fellow; Graduate Research Assistant**, Johns Hopkins
University School of Medicine, Baltimore, Maryland

1985-1987 **Rockefeller Foundation Postdoctoral Research Fellow**, Johns
Hopkins University School of Medicine, Baltimore, Maryland, USA
Mentor: Professor Daniel M. Lane

1987-1989	Research Associate , Johns Hopkins University School of Medicine, Baltimore, Maryland, USA Mentor: Professor Daniel M. Lane
1989-1992	Assistant Professor of Biochemistry and Molecular Biology , Georgetown University Medical School, Washington, DC USA
1992-97	Assistant Professor of Biochemistry and of Nutritional Sciences , University of Wisconsin-Madison, Madison, Wisconsin, USA
2000	Acting Assistant Dean, College of Agricultural and Life Sciences , University of Wisconsin-Madison, Madison, Wisconsin, USA
1997- 2002	Associate Professor of Biochemistry and of Nutritional Sciences , University of Wisconsin-Madison, Madison, Wisconsin, USA
2002-Present	Professor of Biochemistry and of Nutritional Sciences , University of Wisconsin-Madison, Madison, Wisconsin, USA
2003-Present	Endowed Steenbock Professor University of Wisconsin-Madison, Madison, Wisconsin, USA

GENERAL RESEARCH INTERESTS:

The general theme of my research is to understand the genetic regulation of metabolism. I am specifically interested in the genetic basis of obesity and diabetes and how dietary factors, hormones and environmental factors influence these disease states. In particular I study the regulation of the mammalian stearoyl-CoA desaturase (SCD) genes that encode an enzyme involved in the biosynthesis of monounsaturated fatty acids. We are using these genes as a model to understand nutrient gene interactions. **We have recently genetically engineered mice that are born without the stearoyl-CoA desaturase gene I and found that these mice resist obesity, diabetes, fatty liver disease, and other aspects of the metabolic syndrome. Based on our findings pharmaceutical companies are developing drugs for the treatment of human obesity and diabetes.**

I am also interested in conducting research on obesity and diabetes and on other non-communicable metabolic diseases in developing countries.

Publications:

1. **Ntambi, J. M.,** Marini, J. C., Bangs, J. D., Hajduk, S. L., Jiminez, H. E., Kitchin, P. A., Klein, V. A., Ryan, K. A. and Englund, P. T. The presence of bent helix in the fragments of kinetoplast DNA minicircles from several trypanosomatid species. Mol. Biochem. Parasitol. 12, 273-286 (1984).

2. **Ntambi, J. M.** and Englund, P. T. A gap at a unique location in newly replicated kinetoplast DNA minicircles from *Trypanosoma equiperdum*. *J. Biol. Chem.* 260, 5574-5579 (1985).
3. **Ntambi, J. M.**, Shapiro, T., Ryan, K. A. and Englund, P. T. Ribonucleotides associated with a gap in newly replicated kinetoplast DNA minicircles from *Trypanosoma equiperdum*. *J. Biol. Chem.* 261, 11890-11895 (1986).
4. **Ntambi, J. M.**, Ryan, K. A. and Englund, P. T. The replication origin in kinetoplast DNA minicircles from *Trypanosoma equiperdum*. In: *Molecular Biology of Parasitic Invasion*, Alan R. Liss, Inc., pp. 113-120 (1987).
5. **Ntambi, J. M.**, Buhrow, S. A., Kaestner, K. H., Sibley, E., Christy, R. J., Kelly, T. J. and Lane, M. D. Differentiation-induced gene expression in 3T3-L1 preadipocytes: Characterization of a differentially-expressed gene encoding stearoyl-CoA desaturase. *J. Biol. Chem.* 263, 17291-17300 (1988).
6. Kaestner, K. H., **Ntambi, J. M.**, Kelly, T. J. and Lane, M. D. Differentiation-induced gene expression in 3T3-L1 preadipocytes: A second differentially expressed gene encoding stearoyl-CoA desaturase. *J. Biol. Chem.* 264, 14755-14761 (1989).
7. Christy, R. J., Young, V. W., **Ntambi, J. M.**, Geiman, D. E., Landschulz, W. H., Friedman, A. D., Nakabeppu, Y., Kelly, T. J. and Lane, M. D. Differentiation-induced gene expression in 3T3-L1 preadipocytes: C/EBP interacts with and activates the promoters of two adipocyte-specific genes. *Genes Dev.* 2, 1323-1335 (1989).
8. **Ntambi, J. M.** Dietary regulation of stearoyl-CoA desaturase 1 gene expression in mouse liver. *J. Biol. Chem.* 267, 10925-10930 (1992).
9. Pastano, G., Prince, A., Guyden, J., **Ntambi, J. M.**, Atkin, A. and Boto, W. O. Independent divergence in the CD4 binding site and V3 loop encoded in two seroprevalent Ugandan HIV-1 clinical isolates. *J. Acq. Immune Def. Syndromes* 6, 872-80 (1993).
10. Waters, K. and **Ntambi, J. M.** Insulin and dietary fructose induce stearoyl-CoA desaturase 1 gene expression in liver of diabetic mice. *J. Biol. Chem.* 269, 27773-27777 (1994).
11. **Ntambi, J. M.** Cellular differentiation and dietary regulation of gene expression. Prostaglandins Leukotrienes and Essential Fatty Acids 52, 117-120 (1995).
12. **Ntambi, J. M.** The regulation of stearoyl-CoA desaturase (SCD). *Prog. Lipid Res.* 34, 139-150 (1995).
13. Smulson, M. E., Kang, V. H., **Ntambi, J. M.**, Rosenthal, D. S., Ding, R. and Simbulan, C. M. G. Requirement of the expression of poly (ADP-ribose) polymerase during the early

stages of differentiation of 3T3-L1 preadipocytes as studied by antisense RNA induction. *J. Biol. Chem.* 270, 119-127 (1995).

14. **Ntambi, J. M.**, Sessler, A. M. and Takova, T. A model cell line to study regulation of stearoyl-CoA desaturase gene 1 expression by insulin and polyunsaturated fatty acids. *Biochem. Biophys. Res. Commun.* 220, 990-995 (1996).
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16. **Ntambi, J. M.** and Takova, T. Role of Ca^{2+} in the early stages of murine adipocyte differentiation as evidenced by calcium mobilizing agents. *Differentiation* 60, 151-158 (1996).
17. Casimir, D. A., Miller, C. W. and **Ntambi, J. M.** Preadipocyte differentiation blocked by prostaglandin stimulation of prostanoid FP^2 receptor in murine 3T3-L1 cells. *Differentiation* 60, 203-210 (1996).
18. Miller, C. W. and **Ntambi, J. M.** Peroxisome proliferators induce mouse liver stearoyl-CoA desaturase 1 gene expression. *Proc. Natl. Acad. Sci. USA* 93, 9443-9448 (1996).
19. Casimir, D. A., Miller, C. W. and **Ntambi, J. M.** Preadipocyte differentiation blocked by prostaglandin stimulation of FP receptor. *South African J. Sci.* 92, Abs., p. 563 (1996).
20. Casimir, D. A. and **Ntambi, J. M.** cAMP activates the expression of stearoyl-CoA desaturase gene 1 during early preadipocyte differentiation. *J. Biol. Chem.* 271, 29847-29853 (1996).
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25. Waters, K. M., Miller, C. W. and **Ntambi, J. M.** Localization of a negative thyroid hormone-response element in hepatic stearoyl-CoA desaturase gene 1. *Biochem. Biophys. Res. Commun.* 233, 838-843 (1997).

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- of the harderian gland 1-alkyl-2,3-diacylglycerol. *J. Biol. Chem.* 276, 39455-39461 (2001).
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 51. Gomez, E. F., Miyazaki, M., Marwah, P., Lardy, H. A., **Ntambi, J. M.** and Fox, B. G. Molecular differences caused by differentiation of 3T3-L1 preadipocytes in the presence of either dehydroepiandrosterone (DHEA) or 7-oxo-DHEA. *Biochemistry* 41, 5473-5482 (2002).
 52. Kim, H.-J., Miyazaki, M., Man, W. C. and **Ntambi, J. M.** Sterol regulatory element binding proteins (SREBPs) as regulators of lipid metabolism: Polyunsaturated fatty acids oppose cholesterol-mediated induction of SREBP-1c maturation. *Ann. N.Y. Acad. Sci.* 967, 34-42 (2002).
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 58. Attie, A. D., Krauss, R. M., Gray-Keller, M. P., Brownlie, A., Miyazaki, M., Kastlein, J. J., Lusis, A. J., Stalenhoef, A. F. H., Stoeckl, J. P., Hayden, M. R. and **Ntambi, J. M.** Relationship between stearoyl-CoA desaturase activity and plasma triglycerides in human and mouse hypertriglyceridemia. *J. Lipid Res.* 43, 1899-1907 (2002).
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93. Sampath, H. and **Ntambi, J. M.** Dietary regulation of stearoyl-CoA desaturase-1 expression. *Annals of Nutrition and Metabolism: Proceedings of the 18th International Congress of Nutrition.* September 19-23, 2005, Durban, South Africa (2006).
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95. Sampath, H. and **Ntambi, J. M.** Stearoyl-coenzyme A desaturase 1, sterol regulatory element binding protein-1c and peroxisome proliferators-activated receptor- α : Independent and interactive roles in the regulation of lipid metabolism. *Curr. Opin. Clin. Nutr. Metab. Care* 9, 84-88 (2006).
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97. **Ntambi, J. M.** Lipids, genes, and health. *Science* 312, 698 (2006).
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100. Sampath, H. and **Ntambi, J. M.** Regulation of gene expression by polyunsaturated fatty acids. *Heart and Metabolism* 32: 32-5. (2006)
101. Man, W. C., Miyazaki, M., Chu, K. and **Ntambi, J. M.** Co-localization of SCD1 and DGAT2: implying preference for endogenous monounsaturated fatty acids in triglyceride synthesis. *J. Lipid Res.* 47, 1928-1939 (2006).
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108. Jessica Beryers, Mary Rabaglia, Kathy Schueler, Hong Lan, Mark Gray-Keller, **James M. Ntambi** and Alan Attie Loss of Stearoyl-CoA Desaturase-1 Improves Insulin Sensitivity in Lean Mice but Worsens Diabetes in Leptin-deficient Obese Mice *Diabetes* 56, 1228-1239 (2007)
109. Alan D. Attie, Matthew T. Flowers, Jessica B. Flowers, Albert K. Groen, Folkert Kuipers, and **James M. Ntambi** (2007) Stearoyl-CoA Desaturase Deficiency, Hypercholesterolemia, Cholestasis, and Diabetes; *Nutr. Rev.* 65 S35-8 (2007)
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114. Makoto Miyazaki, Matthew T. Flowers, Harini Sampath, Kiki Chu, Carolin Otzelberger, Xueqing Liu and **James M. Ntambi** Hepatic Stearoyl-CoA Desaturase-1 Deficiency Protects Mice from Carbohydrate-Induced Adiposity and Hepatic Steatosis *Cell Metabolism*, Vol 6, 484-496 (2007)
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 117. Sampath, H. and **Ntambi, J. M** Role of stearoyl-CoA desaturase in human metabolic disease *Future Lipidology* 2008. Vol. 3, No. 2, 163-173
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 121. Michael J. MacDonald, Agnieszka Dobrzyn, **James Ntambi** and Scott W. Stoker The Role of Rapid Lipogenesis in Insulin Secretion: Insulin Secretagogues Acutely Alter Lipid Composition of INS-1 832/13 Cells *Archives of Biochemistry and Biophysics* 279 (2008) 153-162.
 122. Pawel Dobrzyn, Harini Sampath, Agnieszka Dobrzyn, Makoto Miyazaki, and **James M. Ntambi** Loss of stearoyl-CoA desaturase 1 inhibits fatty acid oxidation and increases glucose utilization in the heart *Am J Physiol Endocrinol Metab*. 2008 294(2):E357-64.
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128. Matthew T. Flowers and **James M. Ntambi** (2009) Stearoyl-CoA Desaturase and its Relation to High-Carbohydrate Diets and Obesity *BBA* 1791 85-91
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131. Florence Isabirye Muranga, Miriam Kanyago, Fabian Nabugoomu and James M. Ntambi (2009) Investigation of the potential of fortified instant Matooke flour (ITF) in rehabilitation of malnourished children (Part II): Testing potential of ITF as a vehicle food for malnutrition intervention *African Journal of Food Science* Vol. 3(10). pp. 279-287,
132. Harini Sampath, Matthew T. Flowers, Xueqing Liu, Chad M. Paton, Ruth Sullivan, Kiki Chu, Minghui Zhao, and James M. Ntambi. Skin-specific deletion of stearoyl-CoA desaturase-1 alters skin lipid composition and protects mice from high-fat diet-induced obesity *JBC* 2009 284 19961-19973
133. Liu X, Miyazaki M, Flowers MT, Sampath H, Zhao M, Chu K, Paton CM, Joo DS, Ntambi JM (2010) Loss of stearoyl-CoA Desaturase-1 Attenuates Adipocyte inflammation: Effects of Adipocyte-Derived Oleate *Arterioscler Thromb Vasc Biol.* 30, 31-8.
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135. Strable MS, Ntambi JM. (2010) Genetic control of de novo lipogenesis: role in diet-induced obesity. *Crit Rev Biochem Mol Biol.* 45(3):199-214
136. Pawel Dobrzyn, Agnieszka Dobrzyn, Makoto Miyazaki, James M. Ntambi (2010) Lack of stearoyl-CoA desaturase 1 rescues cardiac function in obese leptin-deficient mice *J. Lipid Res.* 51:(8) 2202-2210
137. Chang-Kee Hyun , Eun-Do Kim, Matthew T. Flowers, Xueqing Liu, Eunha Kim, Maggie Strable and James M. Ntambi (2010) Adipose-specific deletion of stearoyl-CoA desaturase

1 up-regulates the glucose transporter GLUT1 in adipose tissue Biochem Biophys Res Commun. 399(4):480-6.

138. Chad M. Paton and James M. Ntambi (2010) Loss of stearoyl-CoA desaturase activity leads to free cholesterol synthesis through increased Xbp-1 splicing. AJP In Press
139. Sihao Liu, Ben Hatano, Minghui Zhao, Chen-Chung Yens, Kihwa Kang, Shannon M. Reilly, Matthew Gangl, Cem Gorgun, James A. Balschi, James M. Ntambi and Chih-Hao Lee (2010) Role of PPAR delta in hepatic energy substrate utilization, JBC In press
140. Xueqing Liu, Maggie S. Strable, and James M. Ntambi (2010) Stearoyl CoA desaturase 1: role in cellular inflammation and stress Advances in Nutrition In Press
141. Matthew T. Flowers, Chad M. Paton, Sheila M. O'Byrne, Kevin Scheisser, John Dawson, William S. Blaner, Christina Kendzierski, James M. Ntambi Metabolic insight into skin disease caused by Scd1 deficiency: a focus on retinol metabolism Physiological Genomics Submitted

Patents:

P00186US,

US Pat #7816075)

US Pat #7696151).

US Pat #7790408),

US: 60/398,471: Methods for Increasing Insulin Sensitivity and for Treating and Preventing Type 2 Diabetes

PO1394 US: Increased Lean Body Mass Through Inhibition of Stearoyl-CoA Desaturase (SCD1): SCD1 is a Target for Muscle Building and Lean Beef Production

P04003 US: Vitamin D Analogs for Obesity Prevention and Treatment

P05141 US: Development of Specific Assay for Human SCD Isoforms and Determination of Substrate Specificities

P05362US: Methods and Materials for Assaying Non-SCD1 Isoforms

P04003US - Vitamin D Analogs For Obesity Prevention And Treatment; *Clagett-Dame Margaret, Deluca Hector F, Ntambi James M, Ahrens Jamie M, Thomson Brian J* (App # 10/997698

U.S. Patent Application No. 11/147,606: Stearoyl-CoA Desaturase 4 Gene

ABSTRACTS: more than 30

PROFESSIONAL EXPERIENCE:

- 1980-1985 Graduate Research Assistant with Dr. Paul Englund,
Department of Biological Chemistry, Johns Hopkins University School of
Medicine, Baltimore, MD
- 1986 Visiting Scientist, International Laboratory for Research on Animal Diseases
(ILRAD), Nairobi, Kenya
- 1989-1992 Member, NIH grant review committee
- 1990 Visiting Professor, Department of Biochemistry, Makerere
University, Kampala, Uganda
- 1991-1994 Consultant, ISTI and USAID's Agency Center for University
Cooperation in Development, Washington, DC
- 1992 Visiting Professor, Department of Biochemistry, Makerere
University, Kampala, Uganda
- 1993 Committee Member, National Research Council/National
Academy of Sciences Grant Review Panel, Washington, DC
- 1994- Reviewer, Proceedings of the National Academy of Sciences
Reviewer, The Journal of Biological Chemistry
- 1995 Member, NIH site visit team, Hunter College, New York, New York
Grant reviewer for the National Research Council/National
Academy of Sciences
Reviewer for Journal of Lipid Research
Chairperson, The Biochemistry Roundtable Discussion Section for
the 10th Annual Committee on Institutional Cooperation (CIC)
Conference, University of Wisconsin-Madison
- 1996 Reviewer, Journal of Nutritional Biochemistry
Reviewer for Biochim. Biophys. Acta
- 1997- Reviewer for Journal of Lipid Research
Reviewer for Journal of Nutrition
Grant Reviewer for USDA
- 1998- Grant Reviewer for American Heart Association
Member, Editorial Advisory Board of Nutrition: The International

Journal of Applied and Basic Nutritional Sciences
Member, NIH Site Visit Team, Boston University

1999-2000	Member, NIH site visit team, Boston University
2001-2002	Chair, Nutrient and Gene Interactions Interest Research Section International Society of Nutritional Sciences
2001-2004	Member, NIH Physiological Chemistry Study section
2004-Present	Member of MGC NIH Study section
2002-2004	Committee member Food and Nutrition Board, Institute of Medicine, National Academy of Sciences
2002-2007	Member of NIAAA Board of Scientific Counselors Member of the GRE Biochemistry, Cell and Mol. Biol. Committee of Examiners
2004-present	Grant Reviewer for Research Council of Norway
2006	Committee member NIH State of-the-Science Conference on Multivitamin/Mineral Supplements and Chronic Disease Member of CADO NIH Study section Member of the GRE Biochemistry, Cell and Mol. Biol. Committee of Examiners
2006-Present	Reviewer BBRC Reviewer, Journal of lipid Research Reviewer, Cell and metabolism Reviewer, Journal of Clinical Investigation Reviewer American Journal of physiology Endocrinology and Metabolism Reviewer Diabetes Journal Reviewer, International Journal of Obesity
2007	Co-chair of the Board of Examiners for the Graduate Record Examination in Biochemistry, Cell and Molecular Biology
2008 -Present	Member of CADO NIH study section Xenobiotic and Nutrient Disposition and Action (XNDA) NIH study Section Reviewer Fulbright African Regional Research Program

HONORS AND AWARDS:

1975	Honors in Biochemistry and Chemistry
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1975	UNDP/UNESCO Fellowship
1976-1978	Exchange Program of the Federal Republic of Germany (DAAD) Fellowship
1980-1985	Predoctoral Fulbright Fellowship
1985	The David Israel Macht Research Award in Medical Science, Johns Hopkins University School of Medicine, Baltimore, Maryland
1985-1987	Rockefeller Foundation Postdoctoral Fellowship
1986	Rockefeller Foundation Career Development Award
1990-1997	Frolisch/New York Academy of Sciences Fellowship
1991	Nominee for Dean's Medical School Teaching Award, Georgetown University School of Medicine, Washington, DC
1992-1998	Steenbock Career Development Award, University of Wisconsin-Madison, Madison, Wisconsin
1994-2000	Fogarty International Center/National Institutes of Health (NIH) International Biomedical Research Minority Faculty Fellowship
2001-2003	Wisconsin/Hilldale Undergraduate/Faculty Research award
2002	Outstanding teaching and advising Award UW-Madison
2003	Endowed Steenbock Professorship in Nutritional Sciences
2004	Osborne and Mandel award in Nutritional Sciences
2005	Hilldale Faculty Research award
2006	Hilldale Faculty Research award
2008	Fulbright Fellow, African Regional Research Aard College of Agricultural and Life Sciences Extra Mile Award Vilas Research Award
2009	Excellence in International activities

Scientist of the week

Member of the Uganda National Academy of Sciences

2010: Chancellor's distinguished Teaching award

MEETINGS ORGANIZED:

- 1999 Organizer of the Steenbock Symposium on Adipocyte Biology and Hormone Signaling, University of Wisconsin-Madison
- Organizer and Chair of FASEB symposium on Lipid Metabolism and Gene Expression, Washington, DC
- 2000 Organizer and Chair of the FASEB minisymposium on Adipocyte Differentiation, Metabolism and Gene Expression, San Diego, CA
- 2004 One of the organizers of the American Diabetes Association research symposium on Integrative Role of Fatty Acids in Metabolic Regulations for Obesity and Diabetes, Newport, Rhode Island
- 2005 Chair of FASEB session of the metabolic regulatory circuits meeting, San Diego CA
- 2006 Chair of ISSFL session on omega 3 fatty acids, Cairns Australia
- 2008 Theme Chair 08 ASBMB in San Diego CA

TEACHING AND RESEARCH:

A. TEACHING AT THE UNIVERSITY OF WISCONSIN-MADISON:

International Health and Nutrition 375 : This is a 2 credit course that Dr Kenneth Shapiro and I teach every semester followed by a three week experience at Makerere University, Uganda, Africa during the Winter break. This Winter a total of 12 UW students; 11 undergraduates majoring in Biochemistry, Nutritional Sciences, Bacteriology, Dairy Science etc. and 1 graduate student are going to Uganda for a three week period (January 1 to January 24, 2003). The students will receive lectures on aspects of tropical diseases, malnutrition, obesity and diabetes. They will visit clinics, health centers and communities to receive hands-on experiences in these international health issues.

Biochemistry 501: Introduction to Biochemistry (1993-present)

This is a high enrollment course (approx. 450 students) that is designed to survey the principles of biochemistry for students who are non-majors and those who are biochemistry majors. Some of the students are graduate students. The course is taught every semester. The students come from

different disciplines of the campus including Chemical Engineering, Nutritional Sciences, Bacteriology, Dairy Science, Horticulture, Meat and Animal Science. Biochemistry 501 therefore represents an important service course to the University. This is a three-credit course, which includes three lectures per week and two discussion sections led by the second- or third-year Ph.D. student within the department of Biochemistry. 22 of the 86 lectures per year are presented by myself while the other lectures are presented by Drs. Amasino (20), Rayment (22) and Reznikoff (22).

Biochemistry 510: Biochemical Principles of Human and Animal Nutrition (1999-Present).

This is a three-credit course emphasizing human nutrition. It is a team-taught course, and I present sixteen lectures on micronutrients and hormones that utilize steroid hormone nuclear receptors to elicit biological responses. Enrollment is about 70 students.

Biochemistry 511: Undergraduate seminar course (Fall 1996)

This course is intended for the undergraduate students to disseminate information to colleagues about recent advances in biochemistry, cell biology, molecular biology, immunology, genetics, toxicology, virology, and neurology and related areas. It provides the students with an opportunity to study a topic of interest in depth and to practice oral presentation in a semi-formal, yet supportive setting.

Nutritional Sciences 619: Intermediary Metabolism of Macronutrients (Spring 2000-present)

This is a three credit team-taught course. My lectures are on lipid metabolism and gene expression.

Biochemistry 901: Nutrition and Metabolism seminar course (Fall 1994-present)

This is a 1 credit graduate level course taught in the Fall. The seminar topics are organized as a series of talks which deal with recent advances in a number of specific areas of importance to metabolism /nutrition. Dr. Richard Eisenstein and myself have assumed major responsibility for the organization and management of this course. 10-15 graduate students enroll in this course.

Biochemistry 999: Research orientation course (Fall 1993-present).

I have presented one lecture during the Fall semester to new Biochemistry graduate students about various aspects of the research going on in my laboratory.

B. OFF CAMPUS RESEARCH AND TEACHING: (1992-present)

I have been involved in an international teaching effort, training and guiding foreign medical, veterinary and science students in the area of molecular biology/genetic engineering and recombinant DNA techniques at Makerere University, Kampala, Uganda. This teaching activity was sponsored by the New York Academy of Sciences. In 1996 Dr. William Boto of the City College of New York and I obtained an NIH grant (\$ 1,146,856 for 5 years) to initiate an

International Biomedical teaching and research effort that involves the recruitment of USA students, and training them alongside Ugandan students at Makerere University, Kampala, mainly in the areas of molecular biology and immunology of tropical diseases. I conduct research on diabetes and obesity in Uganda. Our paper entitled "Obesity and Gender Differences in the Risk of Type 2 Diabetes Mellitus in Uganda" was published in the International Journal of Applied and Basic Nutritional Sciences. Overall I strive to enhance closer interaction and more exchange of international research experiences and ideas between faculty and students in America and in developing countries.

During my teaching at Makerere University, I initiated and organized the Biomedical Research Seminar program sponsored by the Fogarty International/NIH that brought together international academic and research institutions involved in biomedical research and teaching in Uganda. These institutions are:

1. Makerere University
2. University of Wisconsin-Madison
3. The City University of New York (CUNY)
4. Case Western Reserve University
5. University of California, San Francisco
6. Joint Clinical Research Center (JCRC)
7. Columbia University
8. The Johns Hopkins University

These seminars are now presented once a month, and the seminar program has been renamed Dean's Lectures.

2002-Present: As a result of my international teaching experiences in Uganda, the University of Wisconsin-Madison signed an agreement with Makerere University, Kampala, Uganda to initiate a student and faculty exchange program. I have consequently developed an **international health course (375) focusing on health and nutrition in Uganda**. This class is followed with a three-week experience in Uganda, East Africa. So every December, since 2002, I have traveled with students and faculty and spent time together visiting clinics, hospitals and communities assessing nutritional problems and other health issues in Uganda. **So far more than 120 UW students and more than 15 faculty members have participated in this course.**

C. RESEARCH TRAINING AT WISCONSIN:

Past trainees include 10 postdoctoral fellows, 15 PhDs. 3 masters, 8 undergraduate and 2 high school students.

MY CURRENT RESEARCH GROUP CONSISTS OF:

Dr. Chang-Kee Hyun
Dr. Xeuquing Liu
Dr. Matt Flowers
Dr. Chad Paton

Dr. Enpeng Zhao
Minghui Zhao
Margaret Strable
Eunha Kim
Diane Lee
Kevin Schiesser
Zaheer Akhtar
Ade, Lacmbouh G

UNIVERSITY SERVICE:

A. PRESENT UNIVERSITY SERVICE:

Member of CALS task force for the Acceleration of Internationalization
Member of CALS Equity and Diversity Committee
Grant reviewer Hatch competitive funded programs
Member of International degrees committee
Serve on 8 departmental committees of Biochemistry and Nutritional Sciences:
15 Ph.D. and 6 Master degree and 16 preliminary examination committees
5 University training programs
CALS accelerating internationalization task force
Member of the CALS Curriculum Committee

B. PAST UNIVERSITY SERVICE:

Served as Acting Assistant Dean of CALS for student affairs (Spring semester 2000)
Member of Biological Sciences Curriculum planning committee
Member, CALS Animal Care and Use Committee (ACUC) (1996-1999)
Chairperson, The Biochemistry Roundtable Discussion Section for the 10th Annual Committee on Institutional Cooperation (CIC) Conference (1997)
Forum organized by World Bank on funding of international programs (1997)
Faculty Senator for Department of Biochemistry (1993-1995)

INVITED SEMINARS AND LECTURES (1993-Present):

- 1993 Department of Physiology, Michigan State University, East Lansing, MI
Department of Biochemistry, Makerere University, Kampala, Uganda
- 1994 Department of Pharmacology, Makerere University School of Medicine, Kampala, Uganda
Department of Nutrition, University of Wisconsin-Madison
FASEB Meeting, Anaheim, CA
2nd Round Table on Fatty Acids and Cell Signaling, University of Wisconsin-Madison
- 1995 Department of Biochemistry and Molecular Biology, Georgetown University School of Medicine
2nd International Congress of the ISSFAL; International Society for the Study of Fatty Acids and Lipids at NIH, Bethesda, MD

Environmental Toxicology Center, University of Wisconsin-Madison
 Wisconsin Biotechnology Association (WBA) Midwest Regional Biotechnology
 Conference, Madison, WI

- 1996 First South African International Symposium on Development, Cell and Molecular
 Biology, University of Witwatersrand, Johannesburg, South Africa
 Department of Biochemistry, The University of the North, South Africa
 Department of Biological Chemistry, Johns Hopkins University School of Medicine,
 Baltimore, MD
 National Institute of Diabetes and Digestive and Kidney Diseases (NDDK), Division of
 Diabetes, Endocrinology, and Metabolic Diseases, Bethesda, MD
 Department of Anatomy, University of Wisconsin-Madison
 Department of Medical Biochemistry, University of Oslo
 Scandinavian Forum for Lipid Research and Technology, Norwegian Academy of Science
 and Letters, Oslo, Norway
 Department of Biochemistry and Molecular Biology, Odense University, Odense, Denmark

- 1997 Department of Biochemistry, University of Wisconsin-Madison

- 1998 Division of Nutritional Sciences, Cornell University
 FASEB Meeting San Francisco, CA
 Invited speaker to the 89th American Oil Chemical Society and Expo, Chicago, IL
 Department of Nutrition, University of California, Berkeley
 Division of Gastroenterology, Department of Medicine, University of California, San
 Francisco
 Department of MCD Biology, University of California, Santa Barbara

- 1999 Departments of Biochemistry and Animal Sciences, University of Missouri-Columbia: The
 Boyd O'Del lecture
 Skin Biology Research Center, Johnson and Johnson
 Cardiovascular Disease Section, Turlik Corporation
 FASEB Meeting, Washington, DC, and also chair of session of Lipid Metabolism and Gene
 Expression
 40th International Conference on the Biochemistry of Lipids, Dijon, France
 The XXXV annual meeting of The Argentina Society of Biochemical and Molecular
 Biology, Mendoza City, Argentina
 International Workshop on Dietary Factors and Cardiovascular Disease, Rome, Italy
 Organizer and speaker at the Steenbock Symposium on Adipocyte Biology and Hormone
 Signaling, University of Wisconsin-Madison

- 2000 FASEB Meeting, San Diego, CA, and also chair of session of Adipocyte Differentiation
 and Metabolism and Gene Expression
 An International Workshop on Brain Uptake and Utilization of Fatty Acids, Bethesda, MD
 Department of Biology, San Diego State University
 Xenon Genetics Inc., Vancouver, BC, Canada

- 51st Harden Conference on Fatty Acid Desaturases: Function and Future. Wye College, Kent, England
 International Society for the Study of Fatty Acids and Lipids, Tsukuba, Japan
 Invited participant FASEB Minority Access Research Career Program Tucson, Arizona
 Invited speaker: Canadian Society of Exercise Physiology, (CSEP) Conference University of Calgary, Calgary, Alberta, Canada
 Invited speaker: An International workshop on Omega 3 Fatty Acids, Diabetes and Cardiovascular Disease, Bethesda, MD
- 2001 FASEB Meeting, Orlando, Florida
 Seminar Dept. of Biochemistry, James Cook University, Townsville, Australia
 2nd Messengers and phosphoproteins, Melbourne, Australia.
 Department of Jewish studies, University of Sydney, Australia
 Millennium Pharmaceuticals Inc., Cambridge, MA
 Hoffmann-La Roche, Nutley, NJ
 Gordon Research Conference, Kimball Union Academy, Meriden, NH
 American Chemical Society symposium on Influence of Food Components on Gene Expression, Chicago, IL
 4th International Smolenice Insulin Symposium: Lipids and insulin Resistance, Smolenice Castle, Slovak Republic
 Department of Nutrition, University of North Carolina, Chapel Hill, NC
 National Eye Institute, NIH
- 2002 Department of Chemistry, City College of the City University of New York
 Department of Medicine, National Jewish Medical and Research Center, Denver, CO
 Eli Lilly and Company, Indianapolis, IN
 FASEB Meeting, New Orleans, LA
 American Oil Chemical Society symposium on Lipid Modulation of Gene Expression, Montreal, Canada
 15th International Symposium on Plant Lipids, Okazaki, Japan
 Kern Conference Aspen, CO
 53rd EAAP conference, Cairo, Egypt
 Department of Nutrition, Columbia University, New York, NY
 External Examiner for Vern Dolinsky's Ph.D. thesis Department of Biochemistry, University of Alberta, Edmonton, Alberta, Canada
 Department of Biochemistry, University of Alberta, Edmonton, Alberta, Canada
- 2003 Department of Nutrition, The Pennsylvania State University
 Federation of American Society for Experimental Biology (FASEB) Meeting, San Diego, California
 Gordon Research Conference, Kimball Union Academy, Meriden, New Hampshire
 Federation of American Society for Experimental Biology (FASEB) Summer Conference (Intestinal Lipid transport), Snowmass, Colorado
 Federation of American Society for Experimental Biology (FASEB) Summer Conference (Nutrient Gene Expression), Snowmass, Colorado
 Arteriosclerosis, Thrombosis and Vascular Biology Conference, Washington, DC

Department of Nutrition, University of Wisconsin-Madison, Madison, Wisconsin
 Department of Human Nutrition, University of Florida, Gainesville, Florida
 Department of Biology, San Diego State University, San Diego, California
 Department of Biological Chemistry, Johns Hopkins University School of Medicine, Baltimore, MD
 Departments of Physiology and Internal Medicine, Touchstone Center for Diabetes Research, UT Southwestern Medical Center, Dallas, TX
 Pfizer Discovery Technology Center, Cambridge, MA
 Diabetes and Metabolism, Novartis Institutes for Biomedical Research, Cambridge, MA
 SPRL Cambridge, MA

- 2004 Case Western Reserve University, Department of Nutrition, Cleveland, OH
 American Diabetes Association Symposium, Newport, Rhode Island
 American Diabetes Association meeting, Orlando, Florida
 International Society for the Study of Fatty Acids and Lipids (ISSFAL) meeting, Brighton, England
 Pfizer Discovery Technology Center, Cambridge, MA
 Department of Food Science and Nutrition, University of Minnesota, St Paul, MN
 Saturated Fatty Acids Revisited International Seminar. Uppsala, Sweden
 Third Throne Holst Symposium on Nutrition "Overweight and Nutrition," Oslo, Norway
 NAASO 2004 Scientific Meeting, Las Vegas, Nevada
 Department of Nutrition and Toxicology, UC-Berkeley, Berkeley, CA
 Food summit meeting "Diet and Metabolic Syndrome," Wageningen, The Netherlands
- 2005 Department of Biochemistry, Makerere University, Kampala, Uganda
 Clinical Research Institute of Montreal (IRCM), Montreal, Canada
 Velma Hamilton Middle School, Madison, WI
 Tri-Beta--Omega Pi Chapter Biological Honor Society, University of Wisconsin-Madison
 Department of Food Science and Human Nutrition, Univ. of Illinois at Urbana-Champaign
 Sarah W. Stedman Nutrition and Metabolism Center Departments of Pharmacology and Cancer Biology, Biochemistry, and Medicine, Duke University Medical Center
 Division of Metabolism Endocrinology and Diabetes, Department of Internal Medicine, University of Michigan, Ann Arbor, MI
 The Wenner-Gren Institute, The Arrhenius Laboratories F3 Stockholm University, Stockholm, Sweden
 External Examiner for Andreas Jakobsson's Ph.D. Thesis, The Arrhenius Laboratories F3 Stockholm University, Stockholm, Sweden
 Astra Zeneca, Gotteborg, Sweden
 FASEB Meeting, San Diego, CA, and also chair of Session of Metabolic Regulatory Circuits meeting
 Diabetes and Metabolism, Novartis Institutes for Biomedical Research, Cambridge, MA
 Xenon Pharmaceuticals, Vancouver, Canada
 Summit SCD1 Inhibitor for the Treatment of Obesity Diabetes and Metabolism, Novartis Institutes for Biomedical Research, Cambridge, MA
 American Oil Chemical Society (AOCS) Annual Meeting, Salt Lake City, Utah
 Pfizer Discovery Technology Center, Cambridge, MA

Department of Food Science and Technology, Makerere University, Kampala, Uganda
 Ph.D. Summer School, University of Southern Denmark, Nyborg, Denmark
 International Congress of Nutrition, Durban, South Africa
 Department of Medicine and of Physiology, University of Manitoba, Winnipeg, Manitoba, Canada
 Division of Endocrinology, Diabetes, and Metabolism, University of Pennsylvania School of Medicine

- 2006 Institute of Public Health Makerere University Kampala
 International Society for the Study of Fatty Acids and Lipids (ISSFAL) meeting, Cairns, Australia
 Dept. of Biochemistry, University of Sydney, Sydney, Australia
 Federation of American Society for Experimental Biology (FASEB) Summer Conference (AMPK: Impact on Mammalian metabolism and disease), Snowmass, Colorado
 Pfizer Discovery Technology Center, Groton, CT
 Department of biochemistry, University of Montreal, Montreal Canada
 NIH/NIHAAA Bethesda MD
 Hoffman-La Roche, Nutley, NJ
 CV Therapeutics Palo Alto CA
- 2007 Deuel Conference on Lipids, Borrego Springs California
 Forest Research Laboratories, Jersey City NJ
 University of Washington School of Medicine St Louis MO
 Uganda North American Medical Society Conference, Atlanta Georgia
 Endocrinology Society Meeting Toronto, Canada
 Wake Forest University School of Medicine, Winston-Salem NC
 University of Wisconsin La Crosse, La Crosse WI
 Gordon Research Conference Waterville Valley NH
 Keynote speaker at the Short Term Education Program for Underrepresented Persons, NIDDK/NIH
 Community-based Workshop on Nutrition, Lyantonde Uganda
 Disorders of Lipid Metabolism Symposium San Diego CA
 Eli Lilly and Company, Indianapolis, IN
 Morehouse School of Medicine Atlanta Georgia
 Rutgers University New Brunswick NJ
 Schering-Plough Research Institute Brunswick NJ
- 2008: FASEB Meeting, San Diego, CA, and also chair of Session of Metabolic Regulatory Circuits meeting
 Smith-Kline Omega-3 Fatty Acids Scientific Advisory Board Meeting Philadelphia PA
 Community-based Workshop on Nutrition, Lyantonde Uganda
 School of Public Health Makerere University, Kampala Uganda
 Nkumba University, Uganda
 Community-based Workshop on Nutrition, Kiruhura Uganda

Federation of American Society for Experimental Biology (FASEB) Summer Conference
in Carefree AZ

City-wide morning rounds' at the University of Toronto, Toronto Canada

USAID, African Regional Higher Education Summit, Kigali Rwanda

Glenmark Pharmaceuticals, Mumbai India.

2009 NIH Bethesda MD

Department of Animal Science Texas A&M University College Station, TX

Program in Molecular Medicine University of Massachusetts Medical School Worcester, MA

2009 IFT Annual meeting and Food Expo Anaheim CA

Summer symposium in Nutrition, Genes and Physical Activity Penn State, State College PA

Makerere University School of Public Health, Kampala Uganda

Pennington Biomedical Research Center Louisiana State University Baton Rouge LA

Harvard School of Public Health, Boston MA

2010: Keystone Symposium, Big Sky Montana USA

5th International Barth Syndrome conference Orlando FL

Uganda National Academy of Sciences inauguration, Kampala Uganda

LEM symposium Johns Hopkins University School of Medicine Baltimore MD

Department of Biochemistry and Molecular Biology, Johns Hopkins School of Public Health
Baltimore MD

OMICS symposium University of Maryland College Park MD

SOCIETY MEMBERSHIPS:

American Society for Biochemistry and Molecular Biology

American Institute of Nutrition

American Diabetes Association

American Association for Cancer Research

New York Academy of Sciences

International Society for the study of fatty acids and lipids (ISSFAL)

Uganda National Academy of Sciences